

Two New Species of the Families Liphistiidae and Thomisidae (Araneae) from the Ryukyu Islands, Southwest Japan¹⁾

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小野展嗣²⁾: 琉球諸島産ハラフシグモ科およびカニグモ科
(クモ目) の 2 新種¹⁾

Abstract Two new species of the spider families Liphistiidae and Thomisidae are described from the Ryukyu Islands (Nansei-shotô), Southwest Japan, under the names *Heptathela kanenoi* sp. nov. (from Tokunoshima Island, the Amami Islands) and *Tmarus komi* sp. nov. (from Iriomotejima Island, the Yaeyama Islands). A close relationship is recognized between the new *Heptathela* spider and *H. amamiensis* HAUPT, 1983, known from Amami-ôshima Island. The new species of *Tmarus* is peculiar in having legs without developed spines and independently stands in the Japanese species of the genus.

In the present paper two new species of the spiders of the families Liphistiidae (Mesothelae) and Thomisidae (Opisthothelae) will be described. The Japanese fauna of the family Liphistiidae is constructed by two genera, *Heptathela* KISHIDA, 1923, and *Ryuthela* HAUPT, 1983, including several species occurring in Kyushu and the Ryukyu Islands. Though HAUPT (1983) pointed out that there is an interesting problem on speciation and phylogeny of liphistiids in the islands, the study of the spiders attracted a little attention because of difficulty in collecting the specimens. Tokunoshima Island is situated in the northern part of the Ryukyu Islands, between Amami-ôshima Island and Okinawa-hontô Island. Some specimens of the genus *Heptathela* were recently collected in the island by Dr. M. OWADA and Mr. S. KANENO. On the basis of the material I could compare the *Heptathela* spider from Tokunoshima Island with *H. amamiensis* HAUPT, 1983, from Amami-ôshima Island, and *H. yanbaruensis* HAUPT, 1983, from the northern part of Okinawa-hontô Island. The result of the examination indicates that the spider from Tokunoshima Island is new to science and is closer to *H. amamiensis* than to *H. yanbaruensis*. The new species will be described in the present paper.

For the revisional study of spiders of the family Thomisidae of Japan made by myself in 1988, the material from the Ryukyu Islands were insufficiently supplied. Under the genus *Tmarus* SIMON, 1875, only one species, *T. makiharai* ONO, 1988,

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described from Amami-ôshima Island was hitherto known from the subtropical islands. The second species of the genus from the Ryukyus will be recorded and described herein as new to science on the basis of the material obtained from Iriomotejima Island of the Yaeyama Islands by Mr. A. TANIKAWA. The spider is small and peculiar in having legs without developed spines and easily distinguishable from the other known species from Japan and Taiwan.

The type specimens of the new species to be described in the present paper are preserved in the collection of the Department of Zoology, National Science Museum, Tokyo. The abbreviations herein used are as follows: ALE, anterior lateral eye; AME, anterior median eye; PLE, posterior lateral eye; PME, posterior median eye.

Before going further, I wish to express my sincere thanks to Dr. Mamoru OWADA, National Science Museum, Tokyo, Mr. Akio TANIKAWA, Shichirigahama Senior High School, Kamakura, and Mr. Susumu KANENO, Katano-shi, Osaka, for offering invaluable specimens.

Family Liphistiidae
Heptathela kanenoi sp. nov.
 (Figs. 1-5)

Diagnosis. This new species is closely related to *Heptathela amamiensis* HAUPT, 1983, known from Amami-ôshima Island about 50 km apart from Tokunoshima Island (type area), but is distinguishable from the latter by the following characteristics: the conductor of male palp is wide and rugated; each fold has a spiniform apophysis in the apical part; consequently the conductor has several teeth on the top (*cf.* Fig. 4 and ONO, 1989, p. 122, fig. 4); spermathecae in the female genitalia are compactly set (*cf.* Fig. 5 and ONO, 1989, p. 122, fig. 6).

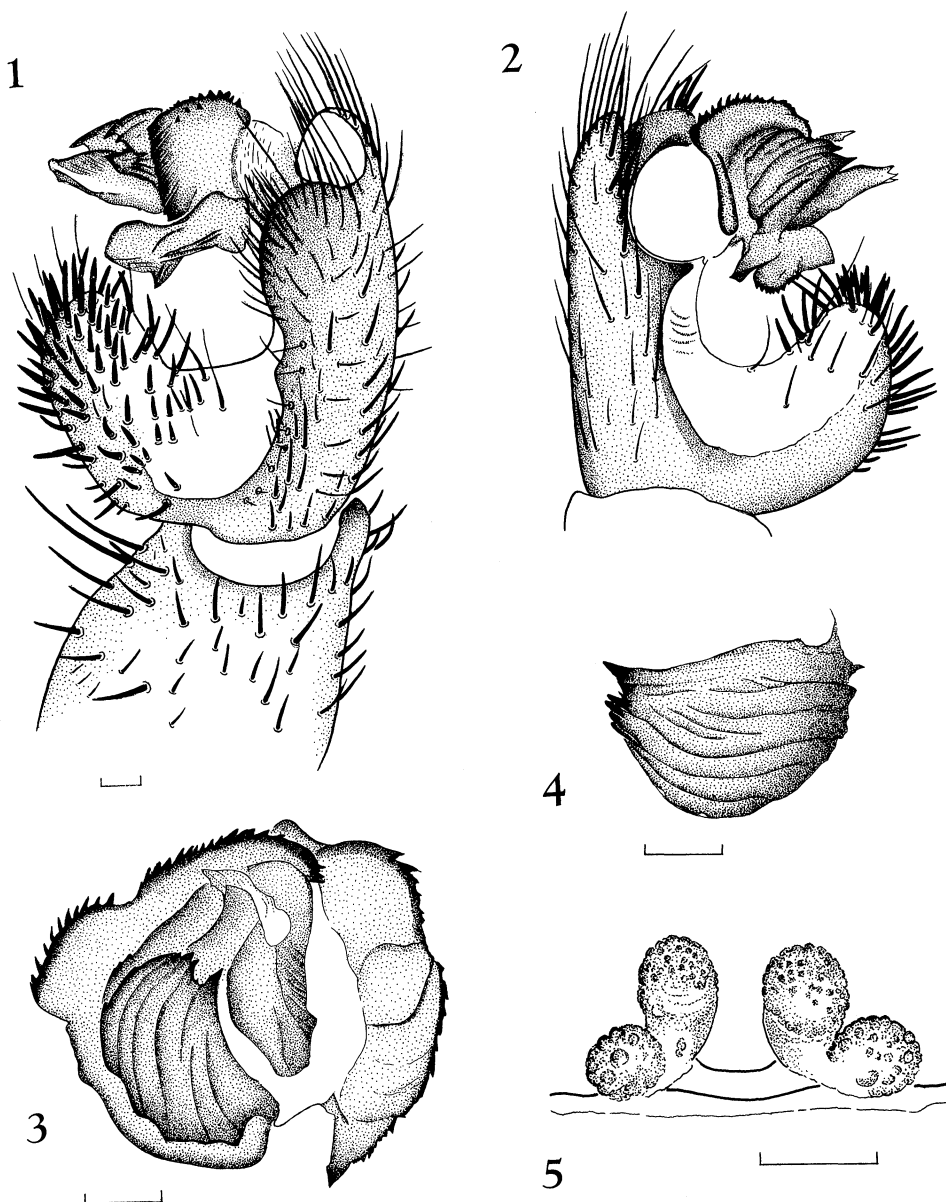
Type series. Holotype: ♂, and allotype: ♀, Mikyô, Amagi-chô, central part of Tokunoshima Island, Ôshima-gun, Kagoshima Prefecture, southwestern Japan, 2-XI-1992, M. OWADA and S. KANENO leg. (NSMT-Ar 3386-3387); paratypes: 1 ♀ 1 ♂, same data as for the holotype (NSMT-Ar 3388-3389).

Other specimens examined. 1 ♀ 2 juv., Kojima, Tokunoshima Island, 1-XI-1992, S. KANENO leg. (NSMT-Ar 3390-3391); 4 juv., same data as for the holotype (NSMT-Ar 3392).

Description. Measurement based on the holotype and allotype. Body length ♀ 10.4 mm, ♂ 10.9 mm; prosoma length ♀ 5.0 mm, ♂ 6.1 mm, width ♀ 4.0 mm, ♂ 5.1 mm; opisthosoma length ♀ 5.9 mm, ♂ 4.9 mm, width ♀ 4.7 mm, ♂ 4.0 mm; lengths of palps and legs [total length (femur + patella + tibia + metatarsus + tarsus)]: ♀, palp 9.7 mm (3.5+1.8+2.2+ - +2.2), leg I 11.2 mm (3.6+1.9+2.2+2.2+1.3), II 11.1 mm (3.5+1.7+2.1+2.4+1.4), III 11.9 mm (3.5+2.0+2.0+2.6+1.8), IV 17.2 mm (4.9+2.4+3.3+4.4+2.2), ♂ palp 11.1 mm (3.5+2.0+3.3+ - +2.3), leg I 17.7 mm (5.3+2.3+3.8+4.2+2.1), II 19.2 mm (4.9+2.6+3.8+5.2+2.7), III 21.4 mm (5.0+2.6+4.1+6.6+3.1), IV 25.5 mm (6.9+2.5+4.9+7.7+3.5). Variation of total length: ♀ 9.2-12.0 mm, ♂ 10.5-10.9 mm.

Prosoma longer than wide, head high; ocular tubercle wider than long, ALE > PLE > PME > AME (nearly 10:9:6:1), AME very small, clypeus wider than ALE-ALE, median ocular area trapezoidal, wider than long. Chelicera with 11-13 teeth on promargin of fang furrow in female, about 10 vestigial teeth in male. Leg formula IV,

III, II, I or IV, III, I, II; legs of males much longer than those of females; superior claws of tarsi each with 3 teeth in female, with 4 teeth in male, inferior claws small and without tooth in both the sexes. The claw of female palp with a tooth.



Figs. 1-5. *Heptathela kanenoi* sp. nov. — 1, Male palp, retrolateral view; 2, same, prolateral view; 3, bulb, distal view; 4, conductor, prolateral view; 5, female genitalia, dorsal view (scales: 0.2 mm).

Male palp (Fig. 1-4). Tibia without apophysis. Bulb (Figs.1-2) appears much different from that of *Heptathela amamiensis* by distortion, however, its structure basically resembles that of the latter species (*cf.* Fig. 3 and ONO, 1989, p.122, fig. 5). Embolus wide lamella, distal sclerites in three parts: tegulum and contrategulum with serrated margin, respectively, conductor wide and rugated, each fold with an apical tooth (Fig. 4).

Opisthosoma ovate, longer than wide; posterior median spinnerets reduced, completely fused in female, paired in male, each peak with a seta.

Female genitalia (Fig. 5). Two pairs of spermathecae present, ovate and compactly set.

Coloration and markings. Prosoma light brown or beige, head darker, ocular tubercle black; chelicera beige in female, brown in male, fang reddish brown, sternum,

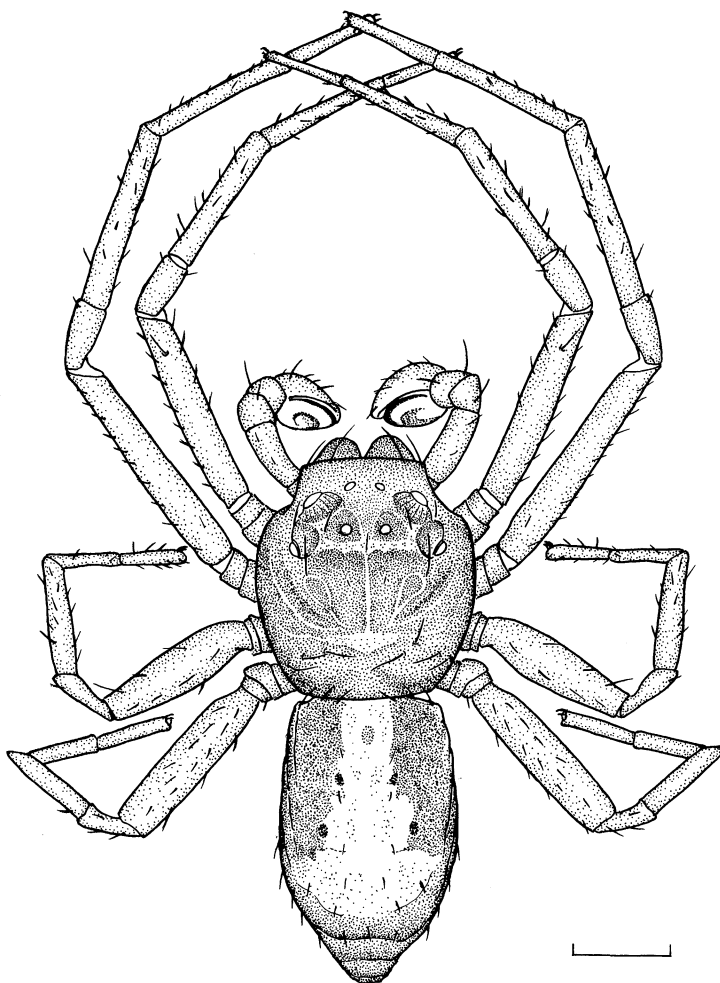


Fig. 6. *Tmarus komi* sp. nov., male holotype, dorsal view (scale: 0.5 mm).

legs and palps yellowish brown. Opisthosoma yellowish brown or beige, dorsal sclerites beige or yellowish brown mottled with greyish brown; ventral sclerites light yellowish brown, spinnerets whitish yellow.

Distribution. Japan (Tokunoshima Island).

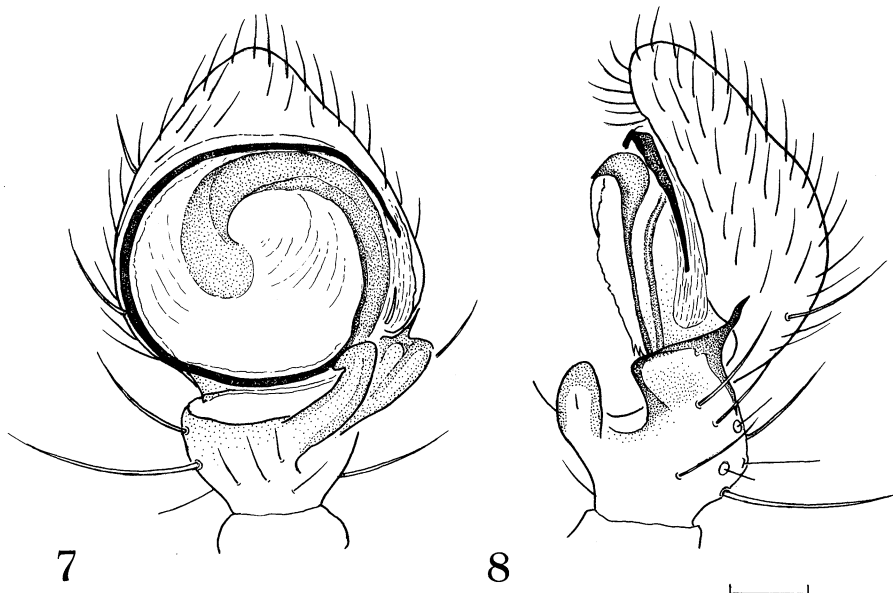
Remarks. This species is dedicated to Mr. Susumu KANENO, Osaka.

Family Thomisidae
Tmarus komi sp. nov.
 (Figs. 6-8)

Diagnosis. This new species is peculiar in the spiders of the genus *Tmarus* of Japan in having legs without developed spines and male palp with wide and simple bulb and long, filiform embolus. Because the spiders of the genus were poorly studied in Southeast Asia, the origin of the new species occurring in a subtropical island in Japan should be traced in future.

Type series. Holotype: ♂, Komi, Iriomotejima Island, Yaeyama Islands, Okinawa Pref., southwestern Japan, 27-III-1995, A. TANIKAWA leg. (NSMT-Ar 3390); paratypes 2 ♂ 2 juv. ♀, same data as for the holotype (NSMT-Ar 3391).

Description of males (adult female unknown). Measurement based on the holotype. Body length 2.60 mm; prosoma length 1.25 mm, width 1.11 mm, height 0.67 mm; opisthosoma length 1.40 mm, width 0.89 mm; lengths of legs [total length (femur + patella + tibia + metatarsus + tarsus)]: I 4.31 mm (1.30+0.44+1.11+0.87+0.59), II 3.95 mm (1.19+0.43+0.96+0.81+0.56), III 2.47 (0.74+0.33+0.65+0.42+0.33), IV 2.81 mm (0.93+0.29+0.74+0.48+0.37). Variation of body length: ♂ 2.59-2.76 mm.



Figs. 7-8. *Tmarus komi* sp. nov. — 7, Male palp, ventral view; 8, same, retrolateral view (scale: 0.1 mm).

Prosoma longer than wide (length/width 1.13 in the holotype), with long setae. Eyes (ratios based on the holotype): ALE > PLE > PME = AME (nearly 6:4:3:3), ALE/AME 1.82, PLE/PME 1.36, AME-AME/AME-ALE 0.90, PME-PME/PME-PLA 0.70, median ocular area slightly longer than wide (length/width 1.02), wider behind than in front (anterior width/posterior width 0.77), clypeus/AME-AME 2.00. Maxillae normal, labium longer than wide, sternum longer than wide. Femur of leg I with 0-0-0-1 dorsal spine, femur of leg III with 0-1-0 dorsal spine, other segments of the legs I and III and all segments of legs II and IV without developed spines, but with some long hairs. Tarsal claws of legs I-IV with 8-10 long teeth.

Male palp (Figs. 7-8). Tibia with ventral and retrolateral apophyses: the ventral apophysis long and digitiform, apically with a blunt hook; the retrolateral one very wide, with a dorsal tooth probably homologous with dorsal tibial apophysis in the other Japanese species as *Tmarus rimosus* PAIK, 1973, *T. yaginumai* ONO, 1977, and *T. makiharai* ONO, 1988. Bulb wider than long, embolus long, filiform, the distal part on tutaculum.

Opisthosoma longer than wide (length/width 1.57 in the holotype), its posterior part not extending beyond spinnerets.

Coloration and markings. Prosoma yellowish brown, darker at the sides, with white lines along radial furrows, clypeus brown, chelicerae brown, maxillae, labium and sternum light yellowish brown, legs dull yellow. Opisthosoma beige, grey or black, with wide median band grey or white, venter light yellow.

Immature females similar in features and coloration to males; body length 2.92-3.22 mm.

Distribution. Japan (Iriomotejima Island).

Remarks. The specific name is a noun in apposition taken from the type locality.

摘 要

琉球諸島(南西諸島)産のハラフシグモ科(ハラフシグモ亜目)およびカニグモ科(クモ亜目)の2新種, *Heptathela kanenoi* ONO, 1996(トクノシマキムラグモ—新称—)と *Tmarus komi* ONO, 1996(コトラフカニグモ—新称(小さいの意)—)を記載した。前者はアマミキムラグモ(*Heptathela amamiensis* HAUP, 1983)と近い類縁関係が認められる。後者は歩脚にほとんど刺を欠くことからほかの日本産の同属各種とはひじょうに異なり, きわめて特異な種と考えられる。

References

- HAUP, J., 1983. Vergleichende Morphologie der Genitalorgane und Phylogenie der liphistiomorphen Webspinnen (Araneae: Mesothelae) I. Revision der bisher bekannten Arten. *Zeitsch. zool. Sys. Evolut.-forsch.*, **21**: 275-293.
- ONO, H., 1977. Thomisidae aus Japan I. Das Genus *Tmarus* Simon (Arachnida: Araneae). *Acta arachnol.*, **27** (special number): 61-84.
- 1988. A revisional study of the spider family Thomisidae (Arachnida, Aeneae) of Japan. *Natn. Sci. Mus. Monographs, Tokyo*, (5): i-ii, 1-252, 1 col. pl.
- & Y. NISHIKAWA, 1989. Taxonomic revision of the heptathelid spider (Araneae, Mesothelae) from Amami-oshima Island, the Ryukyus. *Mem. natn. Sci. Mus., Tokyo*, (22): 119-125.